Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

hemisphere are almost completely eclipsed by those of the nearer hemisphere. Finally, in the first half of the fourth quadrant only the streams of the nearer hemisphere are seen, while the second, or polar half of the same quadrant, has practically the same arrangement as the first half of the first quadrant. The structure in the equatorial regions (giving the appearance of two opposite magnetic poles on the Sun's equator) is in agreement with the theory that the streams of matter are ejected from the spot-zones and are subject to gravitational influences. During this eclipse several powerful eruptions were in action near the Sun's west limb.

A discussion of all the matter available will be embodied in a "Report" on this eclipse, to be subsequently printed.

LICK OBSERVATORY, August 10, 1893.

PHOTOGRAPHS OF COMET *b*, 1893.

BY PROFESSOR W. J. HUSSEY.

During the period of its greatest brightness, I have secured a number of photographs of this comet, using the CROCKER telescope of the LICK Observatory. The objective of this telescope is a portrait lens of nearly 6 inches aperture and with a focal length of about 31 inches. The plates used were 8 x 10 inches, coated with an unusually sensitive emulsion by CRAMER.

The nucleus of this comet is bright and starlike. The coma is dense and nearly circular, having a diameter of about ¼°. There are very faint extensions of the coma in directions at right angles to the tail. These extensions are short. The tail has been bright. So far as these observations go, it was brightest on the evening of July 13. At that time it could easily be traced more than 12° with the naked eye. In most of the photographs it extends beyond the limits of the plates, and exhibits marked and interesting changes from night to night. Some of these peculiarities will be noted.

Tuesday, July 11, $9^h\ 00^m$ to $9^h\ 20^m$. This negative shows the comet with a multiple tail. Four distinct branches proceed from the nucleus, the angle included between the outermost ones being approximately 30°. The middle branches are much the brightest, and at some distance from the nucleus they divide into numerous streamers. These are so faint, on the negative, that it is not possible to determine their number nor the exact manner of their branching. A longer exposure would have given better results, but it was impossible, owing to the low altitude of the comet and the position of the guiding telescope.

Wednesday, July 12, $9^h 00^m$ to $10^h 12^m$. Four distinct branches of the tail spring from the nucleus and include an angle of nearly 40°. The central branches are the brightest. Beginning on the north is a short branch, 1½° long, very gradually diminishing in brightness as the distance from the nucleus increases. The branch next to it is bright and nearly straight. It broadens a little as the distance increases and fades away at about 7°. The next is the brightest of the branches, and the most complicated in structure. It is composed of numerous streamers which in places appear to be interlacing and in others to offer a somewhat doubtful suggestion of an outward spiral motion. Fully 9° of this branch is shown on the plate. The fourth branch is short and without special interest.

Thursday, July 13, $9^h 10^m$ to $10^h 20^m$. The tail has a complicated structure. In it there are several condensations. The distances of the principal ones from the nucleus are approximately 1°.4, 1°.8, 3°.6 and 6°.0. The second of these is much the brightest. It and also the third are sources of dense and strongly curved secondary streamers, giving the tail somewhat the appearance of SWIFT'S comet of last year, as shown in Dr. BARNARD'S photographs. In the present case all the condensations belong to the central parts of the tail. The branches forming the other parts of the tail, in contrast with the central one, are very straight, and with spaces of unusual clearness between them. The four branches of the tail shown in previous negatives are losing their identity. They can still be identified, but with difficulty.

Friday, July 14, $9^h 8^m$ to $10^h 28^m$. For 12° the tail can be traced on the plate. The peculiar condensations of last night have very nearly disappeared. Throughout, the tail is much fainter, and diminishes in brightness very gradually. Near the coma seven branches of the tail are distinctly shown. They are straight, and, excepting the central ones, are short.

Saturday, July 15, $8^h 45^m$ to $9^h 30^m$. Near the nucleus the tail has several distinct branches, of which the central one is the brightest, and, excepting it, they are all straight. It divides at about 1° from the nucleus and near the point of division it is strongly curved. The central part of the tail is about 1° wide at 6° from the nucleus.

Sunday, July 16. The comet presents essentially the same appearance as last night. The central part of the tail broadens a little more rapidly. The streamers are numerous.

Tuesday, July 18, $9^h\,01^m$ to $10^h\,21^m$. In contrast with all the previous negatives, the tail is single near the nucleus. It is very slender at its departure from the coma, and, for about 1°, broadens slowly. Then it begins to divide with numerous streamers. Lateral streamers on the southern side of the tail are common, but not long. The principal streamers are not equally dense in all their parts. Here again is a doubtful suggestion of outward spiral action.

PALO ALTO, CAL., July 22, 1893.

THE SPECTRUM OF COMET *b*, 1893.

BY W. W. CAMPBELL.

The spectrum of this comet has been observed here both visually and photographically, and a large number of new bright lines have been detected.

VISUAL OBSERVATIONS.

The yellow, green and blue bands appear with their usual intensities, but their less refrangible edges seem to be completely resolvable into bright lines. Wave-lengths were determined for two lines in the yellow band, three in the green and one in the blue; and several other ill-defined lines were seen in the yellow and blue bands. A red band at *w. l.* 601 and violet bands at *w. l.* 434 and *w. l.* 421 are easily visible. The wave-lengths obtained are given in the following table. The fifth column contains KAYSER and RUNGE'S wave-lengths of the edges of the corresponding carbon bands.

The continuous spectrum of this comet is relatively much